

WHAT IS CLAIMED IS:

1. A dryer for drying toner particles to create dry free-flowing toner comprising:

a drying chamber;

at least one drying gas inlet extending into the drying chamber for introducing heated drying gas into the drying chamber to produce a circulating flow of drying gas having a curved portion;

a feed inlet for introducing wet toner particles into the circulating flow of drying gas to dry the wet toner particles, wherein centrifugal forces are exerted on the toner particles in the curved portion of the circulating flow of drying gas; and

an exit path communicating with the drying chamber for directing an exiting stream of the drying gas out of the drying chamber to move dry toner particles from the drying chamber.

2. The dryer for drying toner particles defined in claim 1 wherein the exiting stream of drying gas produces exiting forces for moving dry toner particles from the drying chamber when the centrifugal forces exerted on the toner particles are no longer great enough to keep the toner particles in the curved portion of the circulating flow of drying gas.

3. The dryer for drying toner particles defined in claim 1 wherein the exit path communicates with the curved portion such that the exiting stream forms an approximate right angle with the curved portion of the circulating flow of drying gas.

4. The dryer for drying toner particles defined in claim 1 wherein the drying chamber includes a curved portion for containing the curved portion of the circulating flow of drying gas.

5. The dryer for drying toner particles defined in claim 1 wherein the drying chamber is toroidal shaped.

6. The dryer for drying toner particles defined in claim 1 wherein the at least one drying gas inlet is angled with respect to the circulating flow of drying gas.

7. The dryer for drying toner particles defined in claim 1 wherein the heated drying gas is introduced into the drying chamber at a pressure of about 1.0 psi to about 5.0 psi.

8. The dryer for drying toner particles defined in claim 1 wherein the heated drying gas is introduced into the drying chamber at a pressure of about 1.0 psi to about 1.5 psi.

9. The dryer for drying toner particles defined in claim 1 wherein the heated drying gas is introduced into the drying chamber at a velocity of about 3,000 feet per minute to about 5,000 feet per minute.

10. The dryer for drying toner particles defined in claim 1 wherein the heated drying gas is introduced into the drying chamber at a velocity of about 3,800 feet per minute to about 4,200 feet per minute.

11. The dryer for drying toner particles defined in claim 1 wherein the exiting stream is maintained at a temperature of about 12°C below T_g of the toner particles to about 1°C above T_g of the toner particles.

12. The dryer for drying toner particles defined in claim 1 wherein the exiting stream is maintained at a temperature of about 8°C below T_g of the toner particles to about 3°C below T_g of the toner particles.

13. The dryer for drying toner particles defined in claim 11 wherein the heated drying gas is introduced into the drying chamber at a temperature about 15°C above the temperature of the exiting stream to about 40°C above the temperature of the exiting stream.

14. The dryer for drying toner particles defined in claim 13 wherein the heated drying gas is introduced into the drying chamber at a temperature about 20°C above the temperature of the exiting stream to about 35°C above the temperature of the exiting stream.